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ACI-052182-F

AVE-SESAME PROGRAM FOR THE REEDA SYSTEM

FINAL REPORT

Prepared for:

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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Attention:

AP29-F/Edward M. Harper

Under Contract:

NAS8-33844

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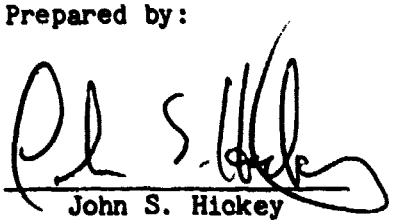
PREFACE

This is the Final Report prepared by Atsuko Computing International (ACI), under Contract NAS8-33844 for the Space Science Laboratory of Marshall Space Flight Center. The NASA technical monitor for this contract is Dr. Gregory S. Wilson (ES84).

Prepared by:



John S. Hickey

ABSTRACT

This report describes the AVE-SESAME Software developed by ACI on the REEDA System Computer.

This software processes the AVE-SESAME Severe Storm data and generates various statistical and graphical outputs.

1. INTRODUCTION

During the past year ACI has been under contract with NASA's Space Sciences Laboratory to complete the design, implementation and system integration testing of the AVE-SESAME Program for the REEDA System.

The initial objective of this project was to modify and improve existing REEDA System software to process the AVE-SESAME Severe Storm data. A sequence of events has been performed by ACI during this contract to accomplish the above objective:

- Designed, tested, and implemented a random access file system for the AVE storm data.
- Modified existing AVE/SESAME software to incorporate the random access file input and to interface with new graphics hardware/software now available on the REEDA system.
- Developed new software to graphically display the AVE/SESAME data in the convention normally used by severe storm researchers.
- Converted IBM software to AVE/SESAME software systems and interfaced with existing graphics hardware/software now available on the REEDA System.
- Provided software documentation for existing AVE/SESAME Programs underlining functional flow charts and interacting questions.
- Processed all AVE/SESAME data-sets in random access format to allow developed software to access the entire AVE/SESAME data base.
- Modified existing software to allow for processing of different AVE/SESAME data-set types including satellite surface and radar data.
- Provided FORTRAN and HP-1000 System-level software/documentation to optimize the processing of AVE/SESAME data sets using new operating systems, equipment, and computer-to-computer links within MSFC's Space Science Laboratory.

2. SOFTWARE DESCRIPTION

A brief description of the AVE Series Program developed under this contract are as follows:

- o AVE01 -- Processes a User specified AVE magnetic tape and generates a printout of the AVE stations, time and date.

- o AVE02 -- Processes a User specified AVE magnetic tape and generates a printout of the AVE soundings.

- o AVE03 -- Processes a User specified AVE magnetic tape and generates a User selected SKEW T plot.

- o AVE04 -- Processes a User specified AVE magnetic tape and generates a User specified "random access" disc file.

- o AVE05 -- Processes a User specified AVE "random access" disc file and prints a User selected AVE sounding.

- o AVE06 -- Processes a User specified AVE "random access" disc file and generates a User selected SKEW T plot.

- o AVE07 -- Computes average access time for reading an AVE record (1728 words) from a Type 2 "random access" disc file.

- o AVE08 -- Processes a User specified AVE magnetic tape and generates a "Sounding Directory" disc file.

- o AVE09 -- Processes a User specified AVE magnetic tape and "Sounding Directory" file and generate a User specified "Random Access" disc file.

- o AVE10 -- Transfers a User specified random access "type 2" disc file with record length of 1728 words from one disc to another.

- o AVE13 -- Transfers a User specified random access "type 2" disc file with record length of 1728 words from disc to magnetic tape.

- o AVE79 -- Processes a User specified AVE-SESAME '79 Random access data base and generates the following outputs:
  1) Printed Sounding
  2) SKEW T Plot
  3) Wind Speed Plot
  4) Wind Direction Plot
  5) Wind Vector Plot.

- o AVE80 -- This program is the same as AVE79 with the exception that AVE80 uses Extended Memory Addressing (EMA) to reduce program loading size.

- o AVE81 -- Generates a weather station labeling plot based upon a user specified longitude, latitude and map scale factors.

- o AVE82 -- Generates a 25mb weather station layer plot based upon a user specified pressure level and up to four components.

- o AVELB -- Interface software library to utilize the new graphics hardware/software now available on the REEDA System.

The following AVE60 series programs utilize the new Graphics 1000 software and the HP-2608 printer/plotter, HP-2647 graphics terminal and HP-9872 4-color plotter.

The following is a brief description of the AVE60 series programs:

- o AVE60 -- Processes a user specified AVE-SESAME '79 random access data base and generates user specified outputs via EXEC calls scheduling the appropriate program.

- o AVE61 -- Generates Users specified SKEW T plot on selected output device.

- o AVE62 -- Generates User specified Wind Speed plot on selected output device.

- o AVE63 -- Generates User specified Wind Vector plot on selected output device.

- o AVE64 -- Generates User specified Wind Direction plot on selected output device.

- o AVE65 -- Generates User specified Detailed Printed Sounding.

- o AVE66 -- Generates User specified Station map with up to four variables per pressure level on selected output device.

- o AVE67 -- Generates User specified SKEW T Base map plots on selected output device.